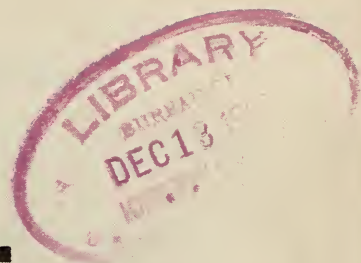


Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

*Mids
Bry*



Production of Peppers

Has been rev.
--see rev.ed.
binders at
end of file.



PRODUCTION OF PEPPERS

By J. H. BEATTIE, *senior horticulturist*, and S. P. DOOLITTLE, *senior pathologist*,
Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry

History and Importance

Although peppers are apparently native to North America, their culture and use were widespread in Europe before they became popular in the United States. Within the past 30 years there has been a great increase in the production and consumption of fresh and canned peppers in the United States. According to data appearing in "Agricultural Statistics, 1936", issued by the United States Department of Agriculture, 17,250 acres of peppers were grown in 1935 for marketing in the fresh state, and production amounted to 3,217,000 bushels. This was approximately one-half million bushels below the average. This figure does not include considerable quantities of the pimiento type of pepper grown in the South Atlantic States and elsewhere for canning. As a rule between 8,000 and 10,000 acres are devoted to the growing of these canning peppers, the production averaging about 14,000 to 16,000 tons a year. Recently the markets for both the fresh and canned peppers have seemed to be fully supplied; it may therefore be assumed that there is no special justification for increasing the acreage or production of peppers.

For many years the pepper has been grown on a small scale in home gardens for use in mixed pickles, as a fresh vegetable mixed with other vegetables for salads, for flavoring meats, and in other ways. Hot peppers are prepared and marketed in such well-known forms as cayenne, tabasco pepper sauce, tabasco catchup, paprika, and "chile powder", which is used in preparing chile con carne. Large quantities of paprika are imported annually, in addition to that grown in this country. Fresh green peppers are commonly found in the vegetable markets packed in crates, hampers, splint baskets, and ventilated barrels. The garden pepper, *Capsicum annuum*, is distinct from the black and white pepper of commerce, which is *Piper nigrum*. The latter is grown only in the Tropics and has an entirely different growth habit.

Description

The pepper is a perfect-flowered annual, the plant being usually 1 to 2½ feet tall, with smooth, glossy, somewhat elongated heart-shaped leaves. The flowers are usually dull white and are borne singly or in groups of two or three. The fruit is variable in size and shape; most varieties are green when immature and red when ripe.

Climatic Adaptation

The climatic requirements of peppers are essentially the same as for the tomato and eggplant. They thrive best in warm climates where

Issued December 1937

there is little danger of frost injury. The pepper is apparently more drought resistant than either the eggplant or the tomato; nevertheless good yields are contingent upon an ample and well-distributed supply of moisture. A light, warm soil fairly retentive of moisture is best. Soils conducive to earliness are especially desirable in regions where the growing season is limited by killing frosts.

Varieties

Pepper varieties are mainly of two commercial types, the sweet or mild-flavored and the so-called hot varieties. Most varieties of sweet peppers are large-fruited; hot peppers are usually small. Approximately 30 varieties of sweet peppers are listed by American seedsmen, but only about 12 to 15 are of much commercial importance. Ruby King, Bull Nose or Large Bell, Chinese Giant, Pimiento, California Wonder, and Golden Queen or Golden Dawn are the most popular among those of the large-fruited, mild-flavored group. Pimiento, or Perfection, is a smaller, more top-shaped, smoother type than the others in this list and is extensively used for canning. Seedsmen have made progress in recent years in improving peppers by increasing the regularity, smoothness, and thickness of flesh of the fruit. Among the newer varieties of sweet peppers which were originated by hybridization and selection are Harris Early Giant and Worldbeater. Early-maturing varieties are desired in the Northern States, where the growing season is short. Among the most popular smaller fruited types, including the hot peppers, are Chili or Red Chili, Cayenne, Anaheim Chili, and Tabasco.

The pungency common to these varieties is principally in and around the seeds, hence it can be removed in part, as desired, in preparing this type for the table. Hot peppers are popular in the warmer regions of the South, especially among people of Spanish descent, by whom they are used extensively in flavoring foods and as a condiment.

Fertilization

The plant-food requirements of peppers are similar to those of tomatoes and eggplants. Fertile soils well supplied with humus are desirable. Large applications of highly nitrogenous fertilizers, while increasing vegetative growth, may also seriously delay maturity. In general, moderate applications of phosphoric acid alone or in a complete fertilizer, such as one analyzing 4 percent of nitrogen, 12 percent of phosphoric acid, and 4 percent of potash, will hasten maturity and increase the yield of fruit. A side dressing of some quickly available form of nitrogen at rates of from 100 to 200 pounds per acre may be used profitably on peppers, particularly those for early market.

Propagation and Planting

On account of their long growing season and their sensitiveness to frost, pepper plants are usually started either in a greenhouse or in hotbeds in the North. In the South early plants are usually grown in cloth-covered steam or hot-water heated frames. Plants for later use are grown either in frames or outdoors.

Pepper seed requires from 8 to 12 days to germinate; hence, plenty of time should be allowed in deciding the date of seeding. Pepper

seed retains its viability about 4 years. About 8 to 10 weeks from seeding is required to develop plants suitable for setting in the field. The seed is sown usually in flats in rows 2 inches apart or is broadcast and transplanted to pots or dirt bands or to other flats when the plants are about an inch high. If transplanted to flats, they should be spaced at least 2 inches apart. Pepper plants are often handled in cloth-covered beds, the seedlings being spaced about 5 inches apart in each direction; and at planting time a knife is run between the plants in each direction, cutting the soil into blocks about the roots. These blocks of soil are then lifted carefully by means of flat trowels, placed on trays, and carefully transported to the fields, where they are set in slight furrows. This method of growing the plants gives practically the same results as are obtained from pot-grown plants. Where the plants are set in the field before the weather has become thoroughly warm it may be necessary to resort to the use of plant protectors. Little, if anything, is gained by setting the plants until after the danger from cold or severe winds has passed. Spacing in the field varies with the variety, but ordinarily it is in rows $2\frac{1}{2}$ to $3\frac{1}{2}$ feet apart and 18 inches apart in the row. The same methods of setting are used as with tomatoes.

Diseases

Peppers are perhaps less seriously affected with diseases than most other vegetables. However, certain diseases may be very serious under seasonal conditions favorable to them. Bacterial spot, anthracnose, rhizoctonia, fusarium wilt, phytophthora blight, cercospora leaf spot, sclerotium rot, and mosaic are the most common diseases.

Bacterial spot is of general occurrence. It is evident on the foliage as small circular, blisterlike spots of a yellowish-green color, and when serious it may cause defoliation. Similar blisterlike spots occur on the fruit and not only injure the appearance but afford entrance to soft-rot organisms. The disease is seed-borne and may be controlled by treating the seed for 2 minutes with corrosive sublimate diluted to a strength of 1 to 1,000 or 1 tablet dissolved in a pint of water and by spraying with 3-6-50 bordeaux mixture to protect the plants in the field.

Anthracnose occurs quite generally, the ripe fruit being especially susceptible. It causes black water-soaked depressions on the fruit, these often being followed by soft rot. Control measures include the destruction of diseased fruits, crop rotation, spraying with bordeaux mixture, and seed disinfection.

Rhizoctonia causes a damping-off of the plants in the seedbed and is best controlled by keeping the surface soil loose and dry and by treating the seed with red oxide of copper or organic-mercury dusts.

Fusarium wilt is most serious on chili peppers in the Southwest. It causes a wilting of the plants, beginning at the base of the stem. The wilt organism lives in the soil and is spread by wind, rain, and irrigation water. It is partially controlled by setting the plants on ridges or by carefully avoiding an excess of irrigation water.

Phytophthora blight is most serious in New Mexico, causing cankers on the stem which produce wilting and death of the plant. The rot lesions on the fruit can be distinguished by the fact that they extend only the long way of the pod. The organism lives in both the soil and the seed. It is controlled by using seed from healthy fruits and by bordeaux spraying.

Cercospora leaf spot is common wherever peppers are grown and is worst in wet years. It causes a circular, water-soaked spotting of the leaves and may produce partial defoliation and occasionally a stem-end decay of the fruit. Spraying with bordeaux mixture and seed disinfection are recommended for its control.

Sclerotium rot produces a firm brown decay at the base of the stem, causing the plant to yellow and die. The organism lives in the soil and on old trash in the field. Clean cultivation, rotation, and seed-bed sterilization with 1 to 50 formaldehyde solution are recommended for control.

Mosaic is of general occurrence and occasionally causes serious losses. It is a virus disease and produces a yellow mottling and malformation of the foliage, accompanied by a severe stunting of the plant. It is spread by aphids. Control measures include use of nicotine sulphate as a spray or dust to kill the aphids and clean cultivation of the land to remove the weeds, which act as wild hosts of the virus that is carried by the aphids.

Insect Pests

The potato flea beetle, the pepper weevil, the pepper maggot, the red spider, and plant lice are the commonest insect pests of the pepper plant. However, with the exception of the pepper weevil in the Southwest and California and the pepper maggot in New Jersey these insects cause only sporadic damage to the crop.

For information regarding the control of these insects apply to your county agent, to your State agricultural experiment station, or to the United States Department of Agriculture, Washington, D. C.

Farmers' Bulletin No. 1371 contains information on the diseases and insects of garden vegetables and can be secured by writing to the United States Department of Agriculture, Washington, D. C.

Harvesting and Marketing

Green peppers intended for marketing in the fresh state should be allowed to reach approximately full size, but should be gathered before they begin to change color. Pimiento peppers used for canning are allowed to develop the red color before picking. Hot peppers used in the preparation of pepper sauce and other similar preparations are allowed to ripen before they are gathered and are given a drying process after being gathered and before they are used. Green peppers intended for the market should be gathered at rather frequent intervals and should not be exposed to the sun and wind but moved directly to the packing shed and packed and sent to market as promptly as possible.

The Bureau of Agricultural Economics of the United States Department of Agriculture has formulated standards for sweet peppers, and this information would be of assistance to those growing peppers for market. A copy of these standards may be obtained by addressing that Bureau.

Peppers are marketed in a variety of containers, but care must be taken to use ones which conform to the legal requirements governing containers for interstate shipment. Information about this matter may also be obtained from the Bureau of Agricultural Economics.